

Mathematics 10D

Properties of Quadratics

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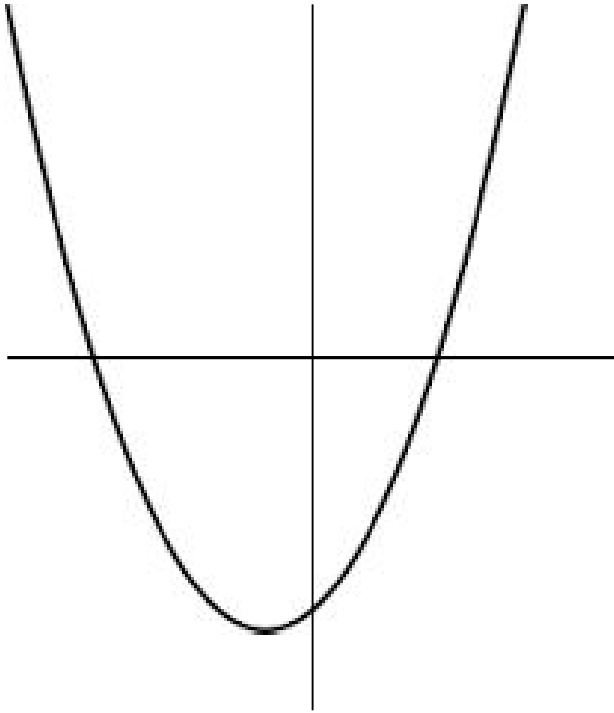
Mathematics 10D Q.01 Properties of Parabolas/Quadratics

- Quadratics are the equations.
- Parabolas are the graphs.

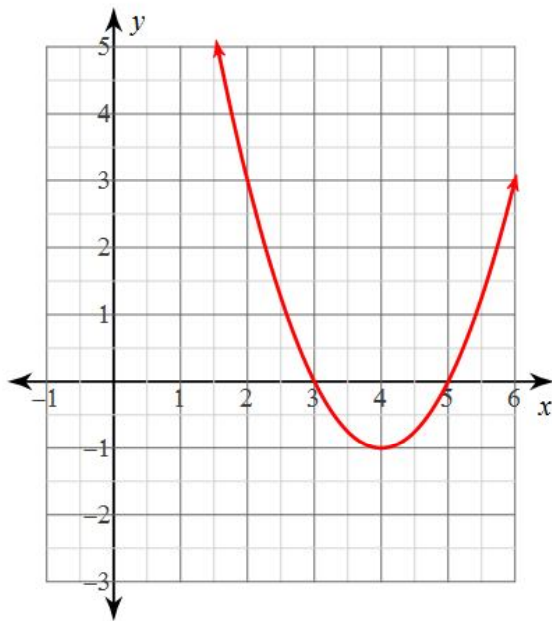
There are three equations of quadratics.

1. Standard Form
2. Zeros/Factored Form
3. Vertex Form

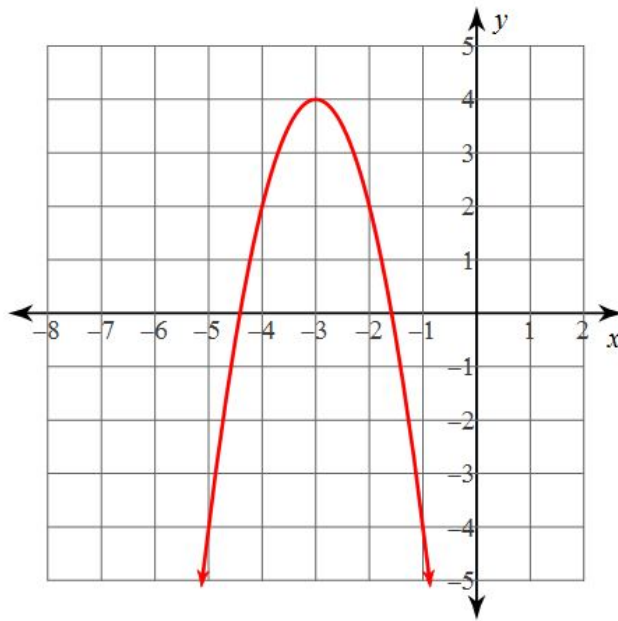
Properties of Parabolas



1) $y = x^2 - 8x + 15$



2) $y = -2x^2 - 12x - 14$

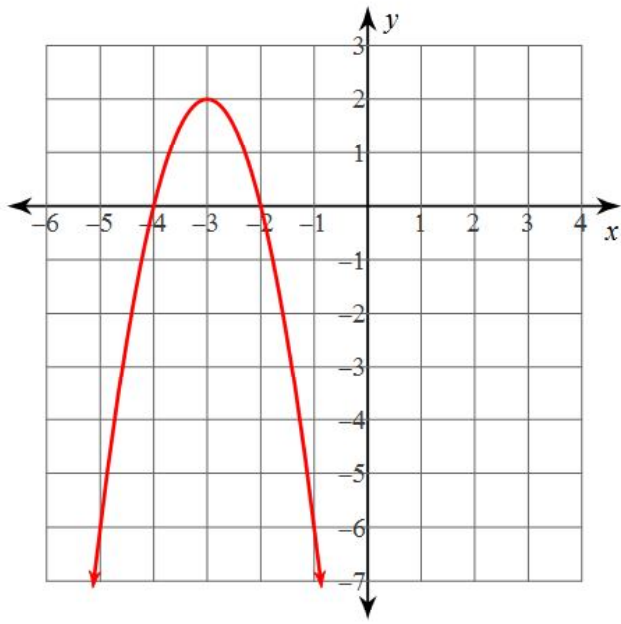


Mathematics 10D Q.02 – Zeros/Factored Form

Standard: $y = ax^2 + bx + c$

Zeros/Factored: $y = a(x - r)(x - s)$

$$y = -2x^2 - 12x - 16$$



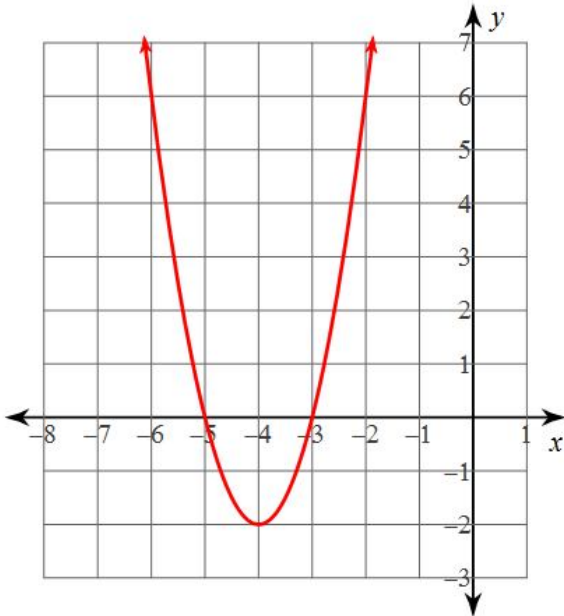
Given the standard form, find the zeros then the vertex.

$$y = 3x^2 + 15x - 18$$

Given the standard form, find the zeros then the vertex.

$$y = 5x^2 + 8x - 4$$

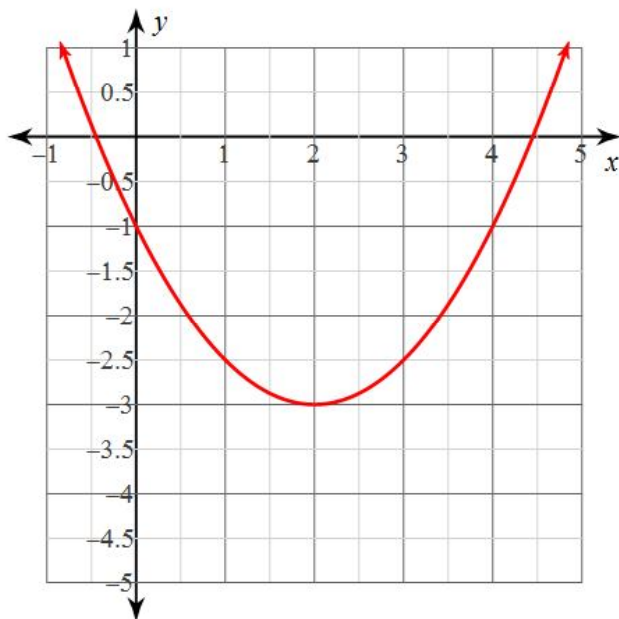
Given the graph, state the equation of the parabola in both zeros form and standard form, then state the y-intercept.



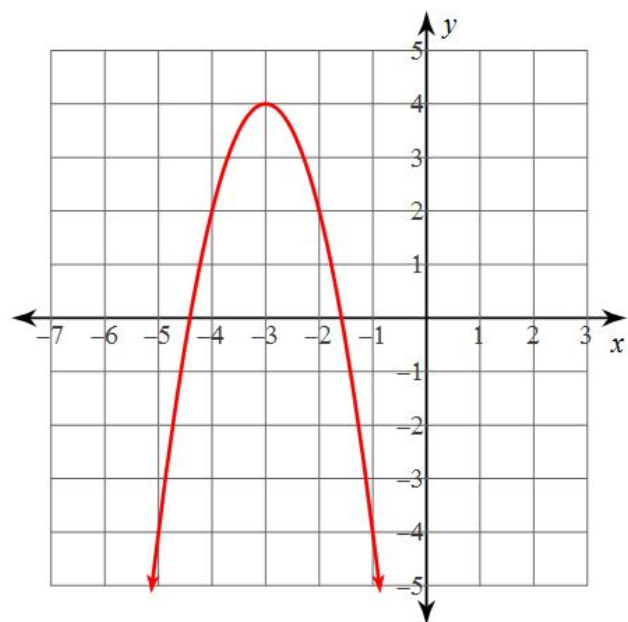
A parabola has a zero at (3,0) and a vertex at (5,12). State the equation of the parabola in both zeros and standard form.

Mathematics 10D Q.03 – Vertex Form

$$y = \frac{1}{2}(x - 2)^2 - 3$$



$$y = -2(x + 3)^2 + 4$$



Convert from Vertex form to Standard form

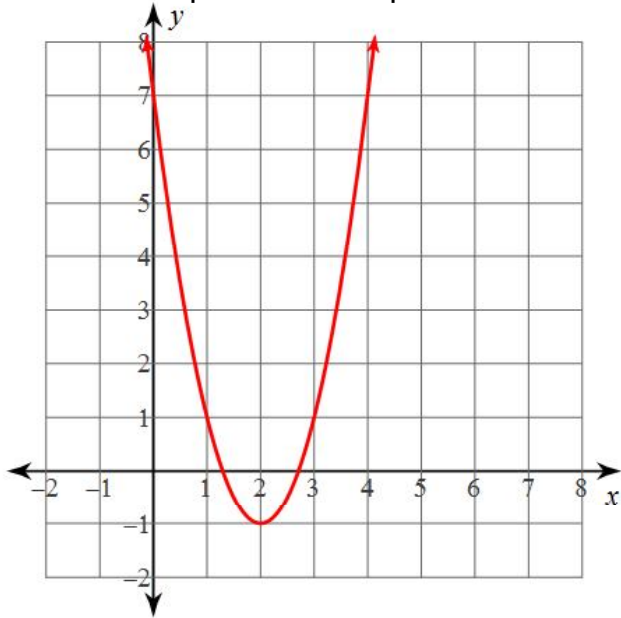
$$y = \frac{1}{2}(x - 2)^2 - 3$$

$$y = -2(x + 3)^2 + 4$$

Convert from Standard form to Vertex form

$$y = 4x^2 + 24x - 64$$

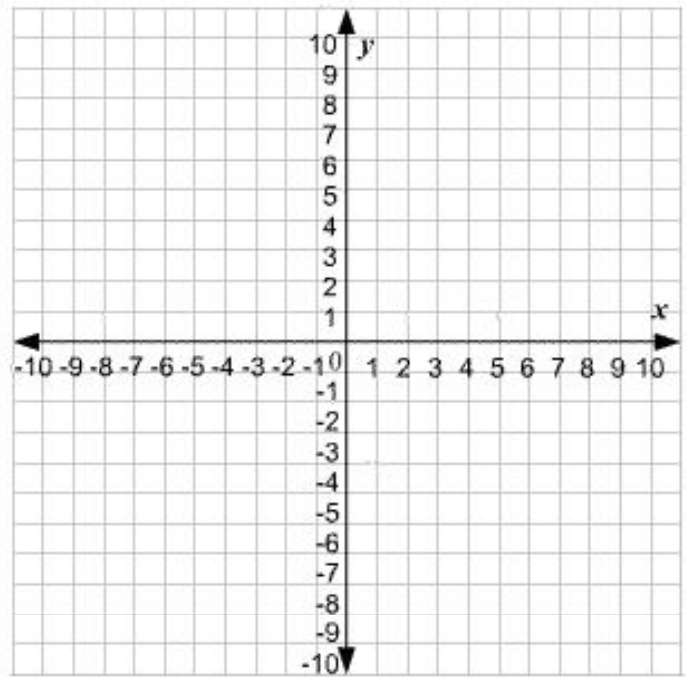
Write the equation of the parabola in vertex form



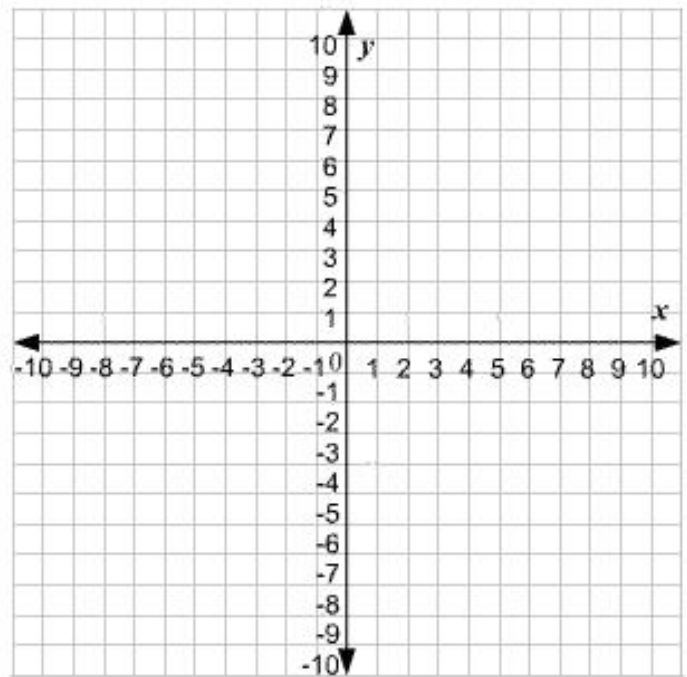
A parabola has a zero at (3,0) and a vertex at (5,12). State the equation of the parabola in both vertex and standard form.

Mathematics 10D Q.04 – Graphing Quadratics

$$y = 2(x - 5)^2 + 3$$



$$y = \frac{-1}{2}(x + 4)^2 + 6$$



Mathematics 10D

Q.05 – Completing the Square

$$(x + 4)^2 =$$

$$(x - 1)^2 =$$

$$(x \text{ ______})^2 = x^2 - 14x + \text{ ______}$$

$$(x \text{ ______})^2 = x^2 + 10x + \text{ ______}$$

$$(x \text{ ______})^2 = x^2 - 348x + \text{ ______}$$

$$(x \text{ ______})^2 = x^2 - 33x + \text{ ______}$$

$$(x \text{ ______})^2 = x^2 - 2.84x + \text{ ______}$$

Convert from Standard form to Vertex form by completing the square, then state the vertex.

$$y = 2x^2 + 12x - 5$$

Let's do another!

$$y = -5x^2 - 40x + 71$$

What happens when a is a fraction?

$$y = \frac{1}{2}x^2 - 5x + 14$$

Uh oh, we have decimals! No worries!

$$y = 2.84x^2 - 8.23x + 5.4$$